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ABSTRACT

This module on medical terminology (root words) is one of 17 modules designed for individualized instruction in health occupations education programs at both the secondary and postsecondary levels. This module consists of an introduction to root words, a list of resources needed, procedures for using the module, a list of terminology used in the module series, and three learning experiences. Each learning experience contains an overview, an objective (e.g., given information about the root words commonly used in medical terminology, identify the root word with its proper meaning), and two or three activities (e.g., study the list of root words and their meanings; practice writing the root word, meaning of the root word, and an example-medical term). Information sheets (such as lists of root words, and sample puzzles are generally provided for each activity. To provide feedback to students, a self-check with model answers is given for the first two learning experiences; a student performance assessment form for use by the instructor follows the third learning experience and completes the module. (KC)

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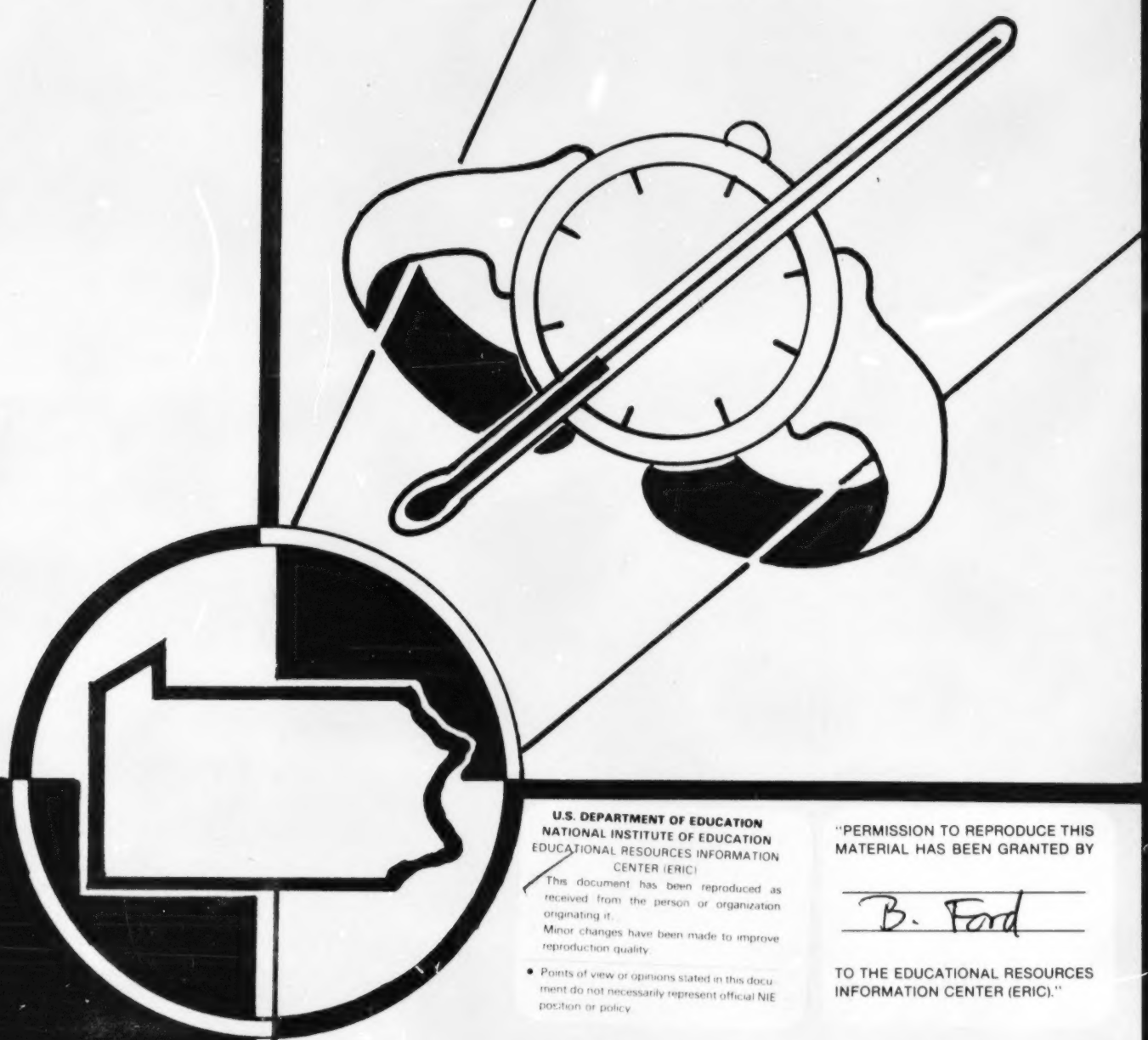
HEALTH OCCUPATIONS EDUCATION MODULE



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MEDICAL TERMINOLOGY: ROOT WORDS

HEALTH OCCUPATIONS MODULE

designed for the purpose
of individualizing instruction
in the health related occupations
program.

Prepared by...

Temple University of the Commonwealth System of Higher Education

Philadelphia, Pennsylvania

DEPARTMENT OF VOCATIONAL EDUCATION

Prof. Dr. Amos C. Rivell, Chairman

In conjunction with...

The Pennsylvania Department of Education

BUREAU OF VOCATIONAL EDUCATION

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There are no prerequisites to this module.

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INTRODUCTION

Non-medical persons are often confused by the terms used by the medical profession to describe symptoms, illnesses and operations. A study of the medical vocabulary will show that it is made up largely of many variations and combinations of prefixes, suffixes and root words.

Knowledge of medical terminology is required of all persons in a Health Occupations Cluster. You need familiarity with the terminology even to find the term in a medical dictionary.

The following learning experiences will enable you to develop competence in the use of many common medical terms.

This module puts its emphasis on root words.

PROCEDURE

After reading the "Introduction," p. 1, and the listed objectives, you should be able to determine how much of this module you will need to complete in order to be competent in the use of root words.

* If you already have the necessary background knowledge required for proficiency in identifying the meaning of common root words, you may not need to complete Learning Experience I.

* If you have had practice in identifying root words with medical terms, you may not need to complete Learning Experience II.

* Instead, with the approval of your resource person, you may choose to proceed directly to Learning Experience III and attempt to meet the Terminal Objective (use proper root word related to each studied unit).

RESOURCES

Listed below are the outside resources which supplement those contained within the module. Check with your resource person to determine the availability and location of the resources.

Learning Experiences I & II - Optional Resource:

Reference: Fisher, J. Patrick: Basic Medical Terminology, Indianapolis, Indiana; the Bobbs-Merrill Publishing Company, 1975. Includes cassette tapes.

Learning Experience III - Required Resources:

* An actual school situation in which you use the proper terminology related to each unit studied.
* A resource person to assess your competency in establishing criteria for student performance in the use of this module.

TERMINOLOGY

Actual School Situation -- refers to a situation in which you are actually a student in a real school.

Occupational Specialty Area -- refers to your major area of emphasis within the medical program.

Peers -- refers to fellow students who are used to:

1) role-play,
2) critique your performance, and
3) participate in discussions.

Unless otherwise specified, these peers should be persons in your own occupational specialty.

Resource Person -- refers to the person in charge of your educational program, i.e., the person who is guiding you in taking this module.

You, or Student -- refers to the person who is taking the module.

LEARNING EXPERIENCE I

OVERVIEW

Enabling Objective	Given information concerning the root words commonly used in medical terminology, identify the root word with its proper meaning.
(Activity 1)	Study the list of root words and their meanings.
(Optional Activity)	With the "Seek and Find Root Words" puzzle provided, see how many you can find.
Feedback	Evaluate your competency by comparing your completed "Self-Check" with the "model Answers." The "Self-Check" in this situation will be a matching test. Given a list of various root words and meanings, match the root word with the correct meaning.

(Activity 1)

ROOT WORDS AND THEIR MEANINGS

A study of medical vocabulary will show that it is made up largely of many variations and combinations of prefixes, suffixes and root words.

This is a module about root words. The root word is the foundation of a term.

The root word is like the root of a tree, a sort of anchor to which the other parts are attached. In medical terminology the root word often refers to an organ of the body.

Here is an example of a medical term using a root word:

PREFIX	+	ROOT WORD	+	SUFFIX
hyper-		therm-		-ia
(increased or above normal)		(heat)		(condition or state of being)

"hyperthermia" = fever, a condition of increased heat in the body.

When two or more root words are used the result is a compound word.

The root word followed by a vowel (to make pronunciation easier) is a combining form.

For example, abdominohysterectomy = removal of the uterus through the abdominal wall.

a) combining form: abdomino- = the abdomen or belly

b) combining form: hystero- = uterus or womb

c) suffix: -ectomy = surgical removal of

Common Root Words and their Combining Forms:

(A root word forms the foundation of a word. In medical terminology it often refers to a bodily organ.)

ROOT WORDS & COMBINING FORMS	MEANING
abdomin-, abdomino-	abdominal
aden-, adeno-	gland, glandular
arterio-	artery
bio-	life, living
carcin-, carcino-	cancer
cardi-, cardio-	heart
chole-	bile, gall-bladder
chondr-, chondro-	cartilage
cleid-, cleido-	clavicle
cost-, costa-	ribs
cyt-, cyto-	cell
derm-, derma-	skin
encyphal-	head
erythro-	red
gastr-, gastro-	stomach
gloss-, glosso-	tongue
glyco-	sugar
gyn-, gyno-	woman, female
hem-, hema-, hemato-, hemo-	blood
hepat-	liver
hist-, histio-	tissue
hyster-, hystero-	uterus
leuc-, leuk-, leuko-	white

Common Root Words and their Combining Forms (continued):

ROOT WORDS & COMBINING FORMS	MEANING
mast-	breast
myo-	muscle
necr-	dead
neph-, nephro-	kidney
neuro-	nerve
occul-	eye
opthal-	eye
os-	bone
ot-	ear
patho-	disease
ped-	child, foot
phobia-	fear of
phleb-	vein
plasia-	grown
pleuro-	side, rib
pneumo-	air, lung
proct-	rectum
psych-, psycho-	mind
py-	pus
rhin-	nose
somat-, somato-	body
thrombo-	blood clot
vas-, vaso-	vessel

(Optional
Activity)

SEEK AND FIND ROOT WORDS

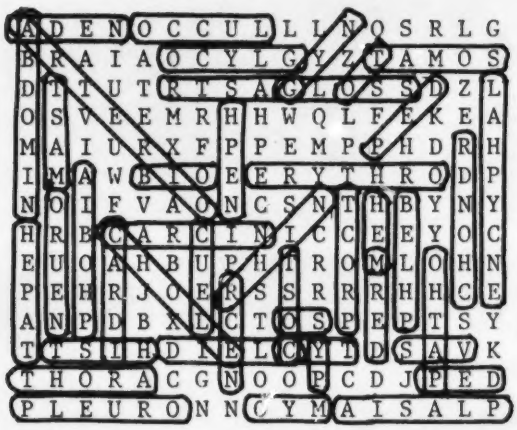
There are forty-one root words hidden in the puzzle on the next page. How many can you find?

Instructions: The hidden root words below appear forward, backward, up, down and diagonally. Find each one and box it in. Some root words will overlap others. How many of the 41 root words can you find?

abdomin-
aden-
arterio-
bio-
carcin-
cardi-
cephal-
chole-
chondr-
cleid-
cost-
cyt-
derm-
encyphal-
erythro-
gastr-
gloss-
glyco-
gyn-
hem-
hepat-
hist-
leuc-
mast-
myo-
necr-
neph-
neuro-
occul-
os-
ot-
patho-
ped-
phobia-
pleuro-
proct-
py-
rhin-
somat-
thora-
vas-

A	D	E	N	O	C	C	U	L	L	L	N	O	S	R	L	G
B	R	A	I	A	O	C	Y	L	G	Y	Z	T	A	M	O	S
D	T	T	U	T	R	T	S	A	G	L	O	S	S	D	Z	L
O	S	V	E	E	M	R	H	H	W	Q	L	F	E	K	E	A
M	A	I	U	R	X	F	P	P	E	M	P	P	H	D	R	H
I	M	A	W	B	I	O	E	E	R	Y	T	H	R	O	D	P
N	O	I	F	V	A	O	N	C	S	N	T	H	B	Y	N	Y
H	R	B	C	A	R	C	I	N	I	C	C	E	E	Y	O	C
E	U	O	A	H	B	U	P	H	T	R	O	M	L	O	H	N
P	E	H	R	J	O	E	R	S	S	R	R	R	H	H	C	E
A	N	P	D	B	X	L	C	T	O	S	P	E	P	T	S	Y
T	T	S	I	H	D	I	E	L	C	Y	T	D	S	A	V	K
T	H	O	R	A	C	G	N	O	O	P	C	D	J	P	E	D
P	L	E	U	R	O	N	N	O	Y	M	A	I	S	A	L	P

Solution to the 41 hidden root words puzzle on the preceding page.


A D E N O C C U L L I N O S R L G
B R A I A O C Y L G Y Z T A M O S
D I T U T R T S A G L O S S D Z L
O S V E E M R H H W Q L F E K E A
M A I U R X F P P E M P P H D R H
I M A W B I O E E R Y T H R O D P
N O I F V A O N C S N T H B Y N Y
H R B C A R C I N I C C E E Y O C
E U O A H B U P H T R O M L O H N
P E H R J O E R S S R R R H H C E
A N P D B X L C T C S P E P T S Y
T T S I H D I E L C M T D S A V K
T H O R A C G N O O P C D J P E D
P L E U R O N N C Y M A I S A L P

Feedback

Evaluate your competency by comparing your completed "Self-Check" with the "Model Answers." The "Self-Check" in this situation is the Matching Test on the following page.

("Self-Check")

MATCHING

Match the given root word with its correct meaning. Write the letter of the correct meaning on the line in front of the number of the root word to be defined.

Exercise

PREFIX	MEANING
_____ 1. carcin-	A. liver
_____ 2. erythro-	B. nose
_____ 3. gastro-	C. nerve
_____ 4. opthal-	D. pus
_____ 5. rhin-	E. stomach
_____ 6. cardi-	F. blood
_____ 7. hepat-	G. skin
_____ 8. py-	H. cell
_____ 9. glyco-	I. mind
_____10. cyt-	J. cancer
_____11. hema-	K. heart
_____12. leuc-	L. eye
_____13. neuro-	M. white
_____14. psych-	N. sugar
_____15. derm-	O. red
	P. lung

Feedback

MODEL ANSWERS

Answers to the matching exercise on the preceding page:

J 1.

O 2.

E 3.

L 4.

B 5.

K 6.

A 7.

D 8.

N 9.

H 10.

F 11.

M 12.

C 13.

I 14.

G 15.

LEARNING EXPERIENCE II

OVERVIEW

Enabling Objective	After completing the required reading, use some common root words to form medical terms. Identify these terms with their proper meaning.
(Optional Activity)	Review the list of common root words.
(Activity 1)	Practice writing the root word, meaning of the root word, and an example (medical term). Pronounce the root word, using the pronunciation guide in the parentheses.
Feedback	Evaluate your competency by comparing your completed "Self-Check" with the "Model Answers."

(Optional
Activity)

Review the list of common root words, pp. 7-8.

(Activity 1)

Practice writing the root word, meaning of the root word, and an example (medical term). Pronounce the root word, using the pronunciation guide in the parentheses.

	ROOT WORD	MEANING	EXAMPLE
1.	cardi- (kar' de)	heart	cardiology (kar-de-ol' o-je)
2.	phleb- (fleb)	vein, veins	phlebitis (fle-bi' tis)
3.	art- (art)	arteries	arterial (ar-te' re-al)
4.	hem- (heem)	blood	hemostat (hee' mo-stat)
5.	thromb- (throm)	blood clot	thrombosis (throm-bo' sis)
6.	thora- (thorah)	chest	thoracotomy (tho' rah-kot" o-me)
7.	derm- (derm)	skin	dermatologist (der' mah-tol" o-gist)
8.	opthalm- (op' thalm)	eye	opthalmology (op' thal-mol" o-je)
9.	proct- (prok)	rectum	proctoscopy (prok-tos' ko-pe)
10.	encephal- (en-sef' ahl)	head	encephalitis (en-sef' ah-li" tis)

PRACTICE SHEET

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(Activity 1 -- cont'd)

	ROOT WORD	MEANING	EXAMPLE
11.	aden- (ah' den)	glands	adenoma (ah' deh-no' mah)
12.	hepat- he-pat')	liver	hepatic (he-pat' ik)
13.	py- (pi)	pus	pyorrhea (pi' o-re" ah)
14.	trache- (tra' ke)	windpipe	tracheotomy (tra' ke-ot" o-me)
15.	eryth- (e-rith')	red, red blood cells	erythrocyte (e-rith' ro-sit)
16.	psych- (sik)	mind	psychology (si-kol' o-je)
17.	ped- (ped)	child, foot	pediatric (pe' de-at" rik)
18.	rhin- (rin)	nose	rhinitis (ri-ni' tis)
19.	ost- (ost)	bone	osteoitis (os' te-i" tis)
20.	vas- (vas)	vessel, duct	vasospasm (vas' o-spasm)

PRACTICE SHEET

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Feedback

Evaluate your competency by comparing your completed "Self-Check" with the "Model Answers."

"Self-Check"

	ROOT	MEANING OF ROOT	EXAMPLE
1.	trache-	_____	tracheotomy
2.	rhin-	_____	rhinitis
3.	phleb-	_____	phlebitis
4.	cardi-	_____	cardiology
5.	art-	_____	arterial
6.	derm-	_____	dermatologist
7.	psych-	_____	psychology
8.	hem-	_____	hemostat
9.	ped-	_____	pediatric
10.	thora-	_____	thoracotomy

MODEL ANSWERS

ROOT	MEANING OF ROOT	EXAMPLE
1. trache-	windpipe	tracheotomy
2. rhin-	nose	rhinitis
3. phleb-	vein	phlebitis
4. cardi-	heart	cardiology
5. art-	arteries	arterial
6. derm-	skin	dermatologist
7. psych-	mind	psychology
8. hem-	blood	hemostat
9. ped-	child, foot	pediatric
10. thora-	chest	thoracotomy

LEARNING EXPERIENCE III

(Please note: You may choose to complete this learning experience without completing the first two experiences, if you think you have proficiency to do so.)

OVERVIEW

Terminal Objective

In an actual school situation, use the proper terminology related to each unit. Your performance will be assessed by your instructor, using the "Student Performance Assessment Form." (Please note: If you are unsure of what is meant by "actual school situation," review the definition given under "Terminology" on page 4.)

(Activity 1) Practice writing the root word, spelling the root word, giving the meaning of the root word and pronouncing the root word.

(Activity 2) Write a medical term which includes a root word.
Change the meaning of a medical term by changing the root word.

(Activity 3)

A. Practice and repeat Activities 1 and 2 above until you have mastered them.

B. When you are satisfied that you have mastered Activities 1 and 2, notify your instructor that you are ready to demonstrate your skill by raising your hand.

C. Have the instructor evaluate and check each step on the "Student Performance Assessment Form," on page 27.

Feedback

Your total competency will be assessed by your instructor, using the "Student Performance Assessment Form."

Based upon the criteria in this assessment instrument, your instructor will determine whether you are competent in the proper use of root words.

(Activity 1)

Practice writing the root word, spelling the root word, giving the meaning of the root word and pronouncing the root word.

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(Activity 2)

Write a medical term which includes a root word.

Change the meaning of a medical term by changing the root word.

(Activity 3)

A. Practice and repeat Activities 1 and 2 above until you have mastered them.

B. When you are satisfied that you have mastered Activities 1 and 2, notify your instructor that you are ready to demonstrate your skill by raising your hand.

C. Have the instructor evaluate and check each step on the "Student Performance Assessment Form," on page 27.

STUDENT PERFORMANCE ASSESSMENT FORM

MEDICAL TERMINOLOGY - ROOT WORDS

	Satisfactory	Unsatisfactory
1. Pronounced the root word correctly at least 7 out of 10 times.		
2. Spelled the root word accurately at least 80% of the time.		
3. Defined the meaning of the root word properly at least 80% of the time.		
4. Used a root word correctly in a medical term; pronounced and spelled the term correctly at least 8 out of 10 times.		
5. Changed the meaning of a medical term by changing the root word -- in at least two examples.		

Instructor's signature: _____

Instructor's comments: